Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-19. (Canceled).

20. (Currently Amended) A method for extending the dynamic range of a photodetector, the method comprising:

providing a photodetector configured in a first configuration comprising a first dynamic range having a first upper limit and a first lower limit;

performing a first measurement of identifiable fluorescent signals with the photodetector at the first configuration such that the photodetector yields a first output signal representing the abundance of a first type of fluorescently labeled particles, and yields a second output signal representing the abundance of a second type of fluorescently labeled particles;

configuring the photodetector to a second configuration comprising a second dynamic range having a second upper limit that is greater than the first upper limit and a second lower limit that is greater than the first lower limit;

performing a second measurement of the identifiable fluorescent signals with the photodetector at the second configuration such that the photodetector yields a third output signal representing the abundance of the first type of fluorescently labeled

particles, and yields a fourth output signal representing the abundance of the second type of fluorescently labeled particles, the first output signal exceeds the first upper limit, the third output signal is within the second dynamic range, the second output signal is within the first dynamic range, the fourth output signal is less than the second lower limit, and the particles of the first type of fluorescently labeled particles are more abundant in the sample than the particles of the second type of fluorescently labeled particles;

determining that the first output signal falls outside of the first dynamic range by determining that the first output signal is greater than the first upper limit; ~~and~~

determining that the fourth output signal falls outside of the second dynamic range by determining that the fourth output signal is less than the second lower limit; and

combining the first measurement and the second measurement to determine a scaled representation of at least one of (1) the first output signal at the first configuration, wherein the scaled representation of the first output signal represents an output signal that was not within the first dynamic range of the photodetector in the first configuration, and (2) the fourth output signal at the second configuration, wherein the scaled representative of the fourth output signal represents an output signal that was not within the second dynamic range of the photodetector in the second configuration,

wherein combining the first measurement and the second measurement comprises scaling the first output signal to a scale associated with the second configuration such that, based on the second configuration, the third output signal is measured and the first output signal is represented based on the scaling of the measured value from the third output signal at the second configuration,

wherein the scaling of the first output signal allows representation of both the second and first output signals when a dynamic range associated with the detector is limited and is not able to measure the first output signal at the first configuration,

wherein the photodetector is a charge-coupled device and the first configuration comprises an exposure duration T1,

wherein the second configuration comprises an exposure duration T2, wherein the exposure duration T2 is shorter than the exposure duration T1, and

wherein the combining comprises multiplying a value of the third output signal by a ratio T2/T1 to determine the scaled representation of the first output signal at the first configuration.

21-32. (Canceled)

33. (Currently Amended) A method of extending the dynamic range of a photodetector that measures detectable fluorescent signals from a sample undergoing a biological analysis wherein the detectable fluorescent signals represent two or more components of the sample, the method comprising:

providing a photodetector configured in a first configuration comprising a first dynamic range having a first upper limit and a first lower limit;

performing a first measurement of the detectable fluorescent signals to obtain a first output signal and a second output signal from the photodetector operated at the first configuration such that the first output signal represents a first component of the detectable fluorescent signals, and the second output signal represents a second component of the detectable fluorescent signals;

configuring the photodetector in a second configuration comprising a second dynamic range having a second upper limit that is greater than the first upper limit and a second lower limit that is greater than the first lower limit;

performing a second measurement of the detectable fluorescent signals to obtain a third output signal and a fourth output signal from the photodetector operated at the second configuration such that the third output signal represents the first component of the detectable fluorescent signals and the fourth output signal represents the second component of the detectable fluorescent signals, wherein the first configuration is such that the first output signal of the first component of the detectable fluorescent signals falls outside the first dynamic range;

determining that the first output signal falls outside of the first dynamic range of the photodetector in the first configuration;

determining that the fourth output signal falls outside of the second dynamic range of the photodetector in the second configuration; and

scaling the first output signal to a scale associated with the second configuration wherein the amount of scaling depends on the first and second configurations and the third output signal, wherein the scaled first output signal allows the generation of a scaled representation of the first output signal at the first configuration and the scaled representation of the first output signal represents an output signal that was not within the first dynamic range of the photodetector in the first configuration.

wherein the first component of the detectable signals is stronger than the second component of the detectable signals.

wherein scaling the first output signal allows representation of both the first and the second components when the dynamic range associated with the photodetector is limited and would not be able to measure the first component at the first configuration,

wherein the detector is a charge-coupled device and the first configuration comprises an exposure duration T1,

wherein the second configuration comprises an exposure duration T2 selected to measure the second component of the detectable signals, wherein the duration of T1 is longer than the duration of T2, and

wherein the combining comprises multiplying a value of the third output signal by a ratio T2/T1 to determine the scaled representation of the first output signal at the first configuration.

34.-44. (Canceled)

45. (Currently Amended) A method for extending the dynamic range of a photodetector, the method comprising:

providing a photodetector configured in a first configuration comprising a first dynamic range having a first upper limit and a first lower limit;

performing a first measurement of identifiable fluorescent signals with the photodetector at the first configuration such that the photodetector yields a first output signal representing the abundance of a first type of fluorescently labeled particles, and yields a second output signal representing the abundance of a second type of fluorescently labeled particles;

configuring the photodetector to a second configuration comprising a second dynamic range having a second upper limit that is less than the first upper limit and a second lower limit that is less than the first lower limit;

performing a second measurement of the identifiable fluorescent signals with the photodetector at the second configuration such that the photodetector yields a third output signal representing the abundance of the first type of fluorescently labeled particles, and yields a fourth output signal representing the abundance of the second type of particles, the first output signal is less than the first lower limit, the third output signal is within the second dynamic range, the second output signal is within the first dynamic range, the fourth output signal is greater than the second upper limit, and the particles of the second type of fluorescently labeled particles are more abundant in the sample than the particles of the first type of fluorescently labeled particles;

determining that the first output signal falls outside of the first dynamic range by determining that the first output signal is less than the first lower limit;

determining that the fourth output signal falls outside of the second dynamic range by determining that the fourth output signal is greater than the second upper limit; and

combining the first measurement and the second measurement to determine a scaled representation of at least one of (1) the first output signal at the first configuration, wherein the scaled representation of the first output signal represents an output signal that was not within the first dynamic range of the photodetector in the first configuration, and (2) the fourth output signal at the second configuration, wherein the scaled representative of the fourth output signal represents an output signal that was not within the second dynamic range of the photodetector in the second configuration.

wherein combining the first measurement and the second measurement comprises scaling the first output signal to a scale associated with the second configuration such that, based on the second configuration, the third output signal is measured and the first output signal is represented based on the scaling of the measured value from the third output signal at the second configuration,

wherein the scaling of the first output signal allows representation of both the second and first output signals when a dynamic range associated with the photodetector is limited and is not able to measure the first output signal at the first configuration,

wherein the photodetector is a charge-coupled device and the first configuration comprises an exposure duration T1,

wherein the second configuration comprises an exposure duration T2, wherein the exposure duration T2 is longer than the exposure duration T1, and

wherein the combining comprises multiplying a value of the third output signal by a ratio T2/T1 to determine the scaled representation of the first output signal at the first configuration.

46.-55. (Cancelled)

56. (Previously Presented) The method of claim 33, further comprising scaling the fourth output signal to a scale associated with the first configuration wherein the amount of scaling depends on the first and second configurations and the second output signal, wherein the scaled fourth output signal allows the generation of a scaled representation of the fourth output signal at the first configuration and the scaled representation of the

fourth output signal represents an output signal that was not within the second dynamic range of the photodetector in the second configuration.

57. (Cancelled)